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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/043,268 05/07/98 VAN KESSEL L 294-44

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EXAMINER

WALLS, D

ART UNIT

PAPER NUMBER

1731

DATE MAILED: 05/25/99

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/043,268

Applicant(s)
Van Kessel et al.

Examiner
Dionne A. Walls

Group Art Unit
1731



☐ Responsive to communication(s) filed on _____

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-20 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-10 and 12-20 is/are rejected.

☒ Claim(s) 11 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☒ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 8

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-3 and 5-8 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4, 9-10 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Vollink et al (US. Pat. No. 3,163,549).

Vollink et al discloses a product and process adapted for use in adhering cellulosic plies to each other to form a stable corrugated paper article (col. 1, lines 12-18). The adhesive is prepared by commingling fine mesh flour (such as corn flour, wheat flour, potato flour, grain flour), which contains a protein and starch fraction, with a proteolytic enzyme (corresponding to the claimed protease) (such as bromalin, papain, trypsin, ficin) at a temperature of about 110 - 120 degrees F (col. 2, lines 21-22, 35-40, 67; col. 3 lines 3-5, 38-40). Further, Vollink et al discloses that it is known in the art to subject flour to be used in the preparation of an adhesive to

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an acid, such as lactic acid (col. 2, lines 22-34). Application to the cellulosic plies means that the "fiber matrix", i.e. the cellulosic plies, contains the modified flour.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 4, 9-10 and 19 are rejected under 35 U.S.C. 103 as being unpatentable over Kesler et al (US. Pat. No. 2,466,172) in view of Stange et al (US. Pat. No. 4,940,514).

Kesler et al discloses a method of preparing an adhesive in which the adhesive characteristics are derived from cereal flour (col.1, lines 1-3). The process serves to partially hydrolyze the proteins of the flour (by adding a small quantity of an alkali) and thus render them more effective for adhesive action. At the same time, the starch portion of the flour is modified/hydrolyzed with a commercial starch hydrolyzing enzyme in order to decrease the viscosity (col. 2, lines 44-48; col. 4, lines 72-74). The invention is applicable to various types of flour which contain starch such as wheat flour, rye flour, corn flour, buckwheat flour, oat flour) (col. 3, lines 20-25). The flour is heated to approximately 185-190 degrees F before ready for use as an adhesive (col. 4, lines 40-46). The fact that this invention is an adhesive means that the "fiber matrix", i.e. the paper to which the adhesive is glued, contains the modified flour.

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While Kesler does not teach the use of amylase, specifically, as the enzyme utilized to decrease the viscosity of the starch, Stange et al teaches the use of amylase to digest starch to reduce the viscosity (col. 1, lines 5-8, 46-55; col. 2, lines 36-45) used to increase the strength of paper.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to utilize amylase to hydrolyze the starch as taught in Stange et al.

6. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollink et al (US. Pat. No. 3,163,549) or Kesler et al (US. Pat. No. 2,466,172).

While neither Vollink et al or Kesler disclose starch and protein components in the precise weight ranges as claimed, it would have been obvious to one having ordinary skill in the art at the time of the invention to vary the protein/starch compositions as long as the final product/process contained/utilized some amount of both protein and starch in order to appreciate the environmental and cost-savings advantages of using both protein and starch in the manufacturing of paper products.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vollink et al (US. Pat. No. 3,163,549) or Kesler et al (US. Pat. No. 2,466,172) in view of Schied (US. Pat. No. 2,559,901).

While neither Vollink et al or Kesler teach that the protein fraction is rendered water-soluble, it would have been obvious to one of ordinary skill in the art to solubilize the protein because this is common in the papermaking process and is taught in Schied (col. 3, lines 50-54).

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8. Claims 5, 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollink et al (US. Pat. No. 3,163,549) or Kesler et al (US. Pat. No. 2,466,172) in view of Applicant's Admitted Prior Art .

While neither Vollink et al or Kesler et al teach a method wherein the flour is introduced into the paper fiber matrix in one step or utilizing a size press, it would have been obvious to subject the protein/starch-containing flour mixture to the size press treatment - a one-step method wherein the solution is pressed into the paper by means of rolling - because this is generally used in the paper industry as admitted by Applicant (see page 10, lines 25-34). Also, while neither Schied or Vollink et al or Kesler et al teach a method wherein the degradation reduces the viscosity to less than about 100 centipoise, it would have been obvious to reduce the viscosity to the level because a skilled person in the paper art knows that for use on a size press, a product having a Brookfield viscosity of less than about 100 cP is required as admitted by Applicant (see page 6, lines 22-24).

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vollink et al (US. Pat. No. 3,163,549) or Kesler et al (US. Pat. No. 2,466,172) in view of Schober (European Patent Application No. 554,659).

While neither Vollink et al or Kesler et al disclose a process wherein the cellulose portion of the vegetable material is fed to the starting paper fiber mass to form a mixed paper fiber mass, Schober discloses a process wherein the cellulosic portion of vegetable material (husks, peels) are added to the raw paper mass which is to be incorporated into the finished paper product (page

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3, lines 1-7; page 4, lines 24-28). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the inventions of Schied or Vollink et al or Kesler et al with this teaching of Schober in order to lower the costs involved in producing paper and create an environmentally friendly paper process by using as much of the vegetable material as possible in the production of said paper.

10. Claims 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vollink et al (US. Pat. No. 3,163,549) and Kesler et al (US. Pat. No. 2,466,172) in view of Lauterbach (US. Pat. No. 3,211,564).

While Vollink et al and Kesler do not each teach the degrading of both the starch and protein components it would be obvious to combine the teachings of both inventions in order to receive the advantages of an improved paper size by controlling the viscosity of the starch (as taught in Kesler) and by degrading the protein fraction (as taught in Vollink et al). This can be done by using protease to affect the degradation of the protein component (as taught in Vollink, col. 3, lines 30-40) and by subjecting the starch to a chemical to control the viscosity of it. Lauterbach teaches that ammonium persulfate has been found to be reliable and effective as an oxidizing agent for modifying raw starch. It can be added to starch that is to be used in the coating of paper (col. 1, lines 10-11; col. 4, lines 21-25). Therefore, it would have been obvious to do so as taught in Lauterbach (col. 2, lines 46-53).

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11. Claims 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kesler et al (US. Pat. No. 2,466,172) and Vollink et al (US. Pat. No. 3,163,549) in view of Stange et al (US. Pat. No. 4,940,514).

As mentioned above, while Vollink et al and Kesler do not each teach the degrading of both the starch and protein components it would be obvious to combine the teachings of both inventions in order to receive the advantages of an improved paper size by controlling the viscosity of the starch (as taught in Kesler) and by degrading the protein fraction (as taught in Vollink et al). This can be done by using protease to affect the degradation of the protein component (as taught in Vollink et al, col. 3, lines 30-40) and by subjecting the starch portion to amylase (as taught in Stange et al, col. 2, lines 40-46).

12. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vollink et al (US. Pat. No. 3,1263,549).

While Vollink et al does not teach using citric or acetic acid, specifically, in the manufacturing of a starch-protein based paper, it would have been obvious to one having ordinary skill in the art at the time of the invention to use any acidification product, other than lactic acid, that is commercially available for the purpose of degrading the protein fraction in flour.

13. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Dionne A. Walls whose telephone number is (703) 305 - 0933. The examiner can normally be reached Monday-Thursday from 6:30AM - 4:00PM (EST). The examiner can also be reached on alternate Fridays.



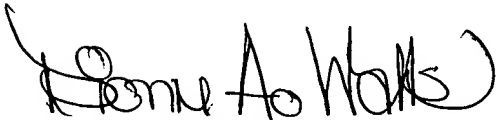
**PETER CHIN
PRIMARY EXAMINER**

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If attempts to contact the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached at (703) 308-3837. Additionally, the fax number for this Group is (703) 305-7718.

A handwritten signature in black ink, appearing to read "Dionne A. Walls". The signature is stylized with a large initial "D" and a cursive "A".

Dionne A. Walls

May 23, 1999